

Contest #2

A. Timon and Pumbaa

1 second, 256 megabytes

Timon has  $a$  candies and his friend, Pumbaa, has  $b$  candies, so Pumbaa asked Timon to tell him the value of  $a - b$ . However, Timon will tell him the value of  $a - b$  if the value is  $\geq 0$ ; otherwise, he will lie and say 0. Since it was a hard task for Timon, he's asking for your help.

Given two numbers  $a$  and  $b$ , find the answer.

**Input**  
Only one line containing two numbers  $a, b$  ( $1 \leq a, b \leq 10^9$ ).

**Output**  
Print the answer as specified in the statement.

input
9 1
output
8

input
1 9
output
0

B. Drawing 'X'

1 second, 256 megabytes

Some day, an artist wanted to draw an **X** mark on the wall in a fashionable way.

He wanted to do so by grouping snippets of slashes /, backslashes \, asterisks \* and a capital **X** letter in an  $N \times N$  square as shown in the sample. Can you help him?

**Input**  
Only one line containing one odd number  $N$  ( $3 \leq N \leq 49$ ).

**Output**  
Print the fashionable drawing.

input
5
output
\\**/ *\\*/ **X** */*\ /***\

C. Finding Minimums

1 second, 256 megabytes

You are given  $N$  numbers, and you should divide them into consecutive groups of size  $K$ , then print the minimum among each group. If the last group is of size  $< K$ , print the minimum number found just after the last number received.

For more explanation, see the **notes**.

**Input**  
First line contains two numbers  $N, K$  ( $1 \leq K \leq N \leq 10^5$ ) – the number of values, and the range length after which you should print the minimum.

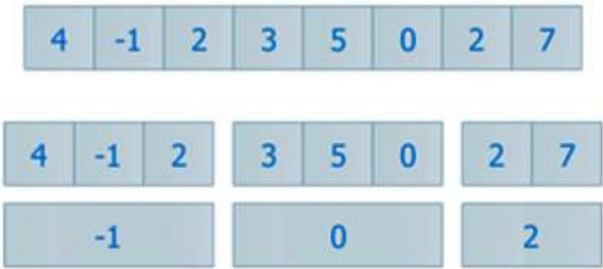
Second line contains  $N$  numbers ( $-10^9 \leq x \leq 10^9$ ).

**Output**  
Print the answer in a single line.

input
8 3 4 -1 2 3 5 0 2 7
output
-1 0 2

input
8 4 4 -1 2 3 5 0 2 7
output
-1 0

- In the **first** test case:
- The minimum number among  $[4, -1, 2]$  is  $-1$ .
  - The minimum number among  $[3, 5, 0]$  is  $0$ .
  - The minimum number among  $[2, 7]$  is  $2$ .



- In the **second** test case:
- The minimum number among  $[4, -1, 2, 3]$  is  $-1$ .
  - The minimum number among  $[5, 0, 2, 7]$  is  $0$ .

D. Range Sum

1 second, 256 megabytes

You are given a range represented by two integers  $L$  and  $R$ , and you should find the sum of the numbers in the range between  $L$  and  $R$  inclusive.

**Input**  
First line contains a number  $T$  ( $1 \leq T \leq 10^5$ ) – the number of test cases.

Each of the next  $T$  lines contains two numbers  $L, R$  ( $1 \leq L, R \leq 10^9$ ).

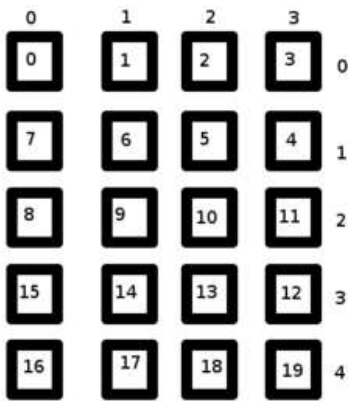
**Output**  
For each test case, print the sum.

input
4 3 6 2 11 4 16 7 17
output
18 65 130 132

E. Hady Rides the Train

0.5 seconds, 256 megabytes

Hady wants to ride a train. He knows his seat number, but he doesn't know the corresponding row or column number of his seat. However, he knows that each row consists of exactly 4 seats. The train seats are numbered from zero as shown in the figure:



Given the seat number, can you find the corresponding row and column numbers of the seat?

Input

Only one line containing  $id$  ( $0 \leq id \leq 10^{18}$ ) – the seat number.

Output

The row and column numbers of the seat.

input
5
output
1 2

input
2
output
0 2

input
0
output
0 0

input
13

output
3 2

F. Break Number

1 second, 256 megabytes

Let's define  $f(x)$  as the number of times at which the integer  $x$  can be divided by 2.

You are given  $N$  numbers, and you should print the maximum  $f(x)$  among all these numbers.

Input

The first line contains one number  $N$  ( $1 \leq N \leq 10^5$ ).

The second line contains  $N$  space-separated numbers where each number is between 1 and  $10^{18}$  (inclusive).

Output

Print the maximum  $f(x)$  among all numbers.

input
3 18 24 7
output
3

input
4 14 7 9 5
output
1

In the first test case:

- 1.  $f(18)$  is equal to 1; because we can divide 18 by 2 resulting in 9, but we cannot divide 9 by 2 (9 is not divisible by 2).
- 2.  $f(24)$  is equal to 3; because we can divide 24 by 2 resulting in 12; again we can divide 12 by 2 (12 is divisible by 2) resulting in 6; again we can divide 6 by 2 (6 is divisible by 2) resulting in 3, but we cannot divide 3 by 2 (3 is not divisible by 2); so we could divide 24 three times.
- 3.  $f(7)$  is equal to 0; because we cannot divide 7 by 2.

G. Construct the Sum

1 second, 256 megabytes

You are given two integers  $n$  and  $s$ , and you have to find distinct positive integers, such that each of them is  $\leq n$ , and their summation =  $s$ . Otherwise, state that this is impossible.

Input

The first line contains a number  $T$  ( $1 \leq T \leq 100$ ) – number of test cases.

Each of the next  $T$  lines contains two space-separated integers  $n, s$  ( $1 \leq n \leq 10^5, 1 \leq s \leq 10^{18}$ ).

Output

For each test case, if there is no possible answer, print  $-1$  on a single line. Otherwise, print the set of numbers that satisfy the above condition on a single line. You can print the numbers in any order. If there are multiple answers, you can print any of them.

input
4 5 3 7 10 6 4 2 10
output
2 1 4 3 2 1 3 1 -1

H. Simple Mod

1 second🕒, 256 megabytes

Hady has a positive number  $N$  and a simple equation:

$(X^2 + Y^2) \bmod N = 0$

Your task is to find any values for  $X, Y$  that satisfy the equation, such that  $X$  and  $Y$  are non-negative integers.

Input

Only one integer  $N$  ( $1 \leq N \leq 10^{100}$ ).

Output

If you can find any two non-negative integers such that  $(X, Y \leq 10^9)$ , print them. Otherwise, print "No solutions".

input
5
output
4 3

input
100000100
output
10 10000

input
50
output
5 5

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